

① Graph $f(x) = (x+3)^2 - 5$ and give vertex, domain, and range

② Find x if $f(x) = 59$ in problem #1

③ Solve for y and sketch a graph of $(y+1)^2 - 3 = x$

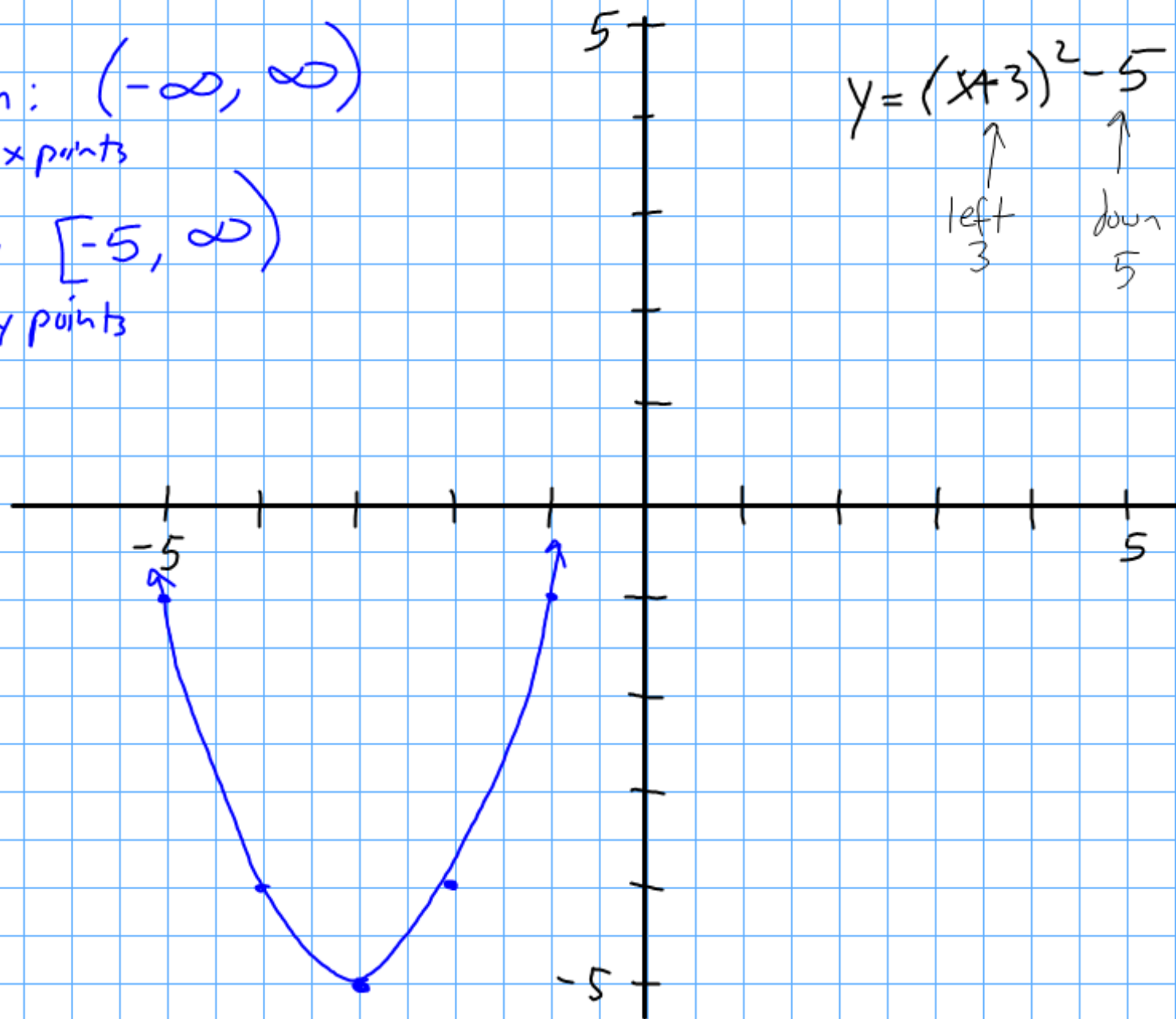
④ If $f(x) = \sqrt{x}$, sketch $f(-x) + 4$ and $-f(x+4)$

Domain: $(-\infty, \infty)$
set of x points

Range: $[-5, \infty)$
set of y points

$$y = (x+3)^2 - 5$$

↑ ↑
left down
3 5



$$f(x) = (x+3)^2 - 5$$

↓

$$59 = (x+3)^2 - 5$$

+5 +5

$$\sqrt{64} = \sqrt{(x+3)^2}$$

$$\pm 8 = x+3$$

-3 -3

$$x = 5, -11$$

$$(y+1)^2 - 3 = x$$

+3 +3

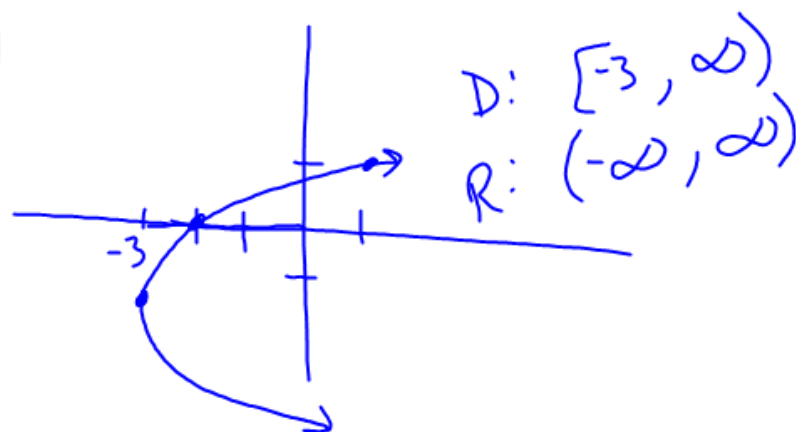
$$\sqrt{(y+1)^2} = \sqrt{x+3}$$

$$y+1 = \pm \sqrt{x+3}$$

-1 -1

$$y = \pm \sqrt{x+3} - 1$$

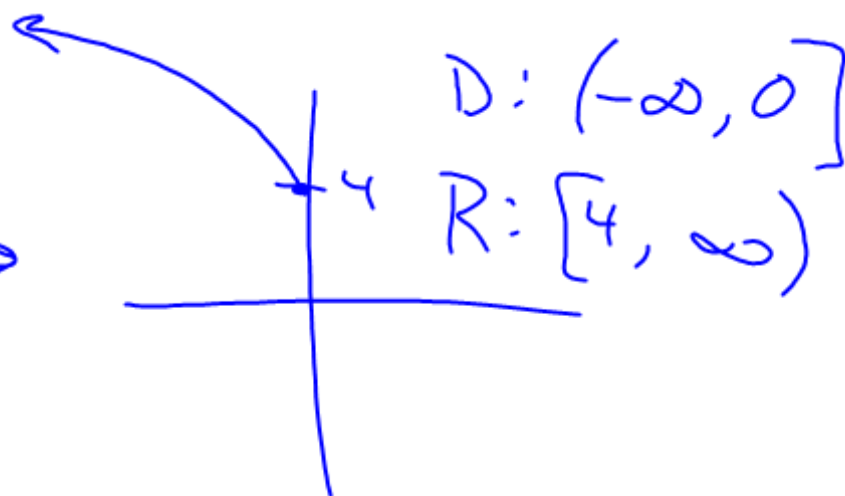
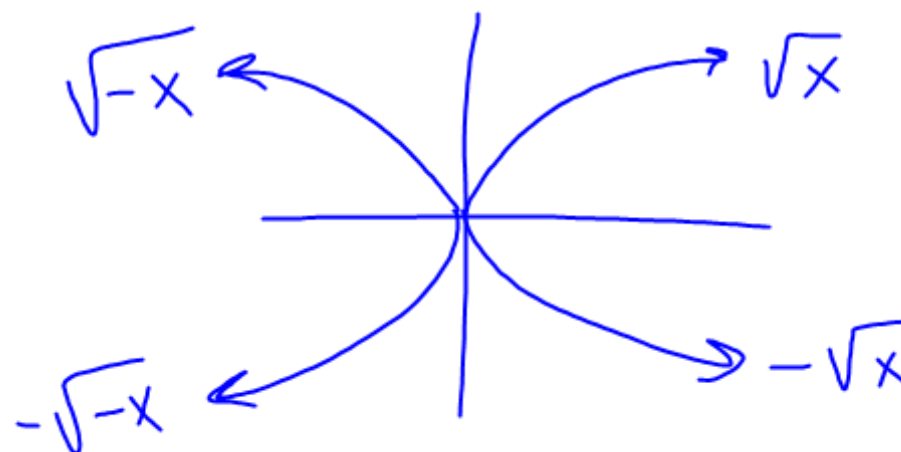
↑ ↑
left down
3 1



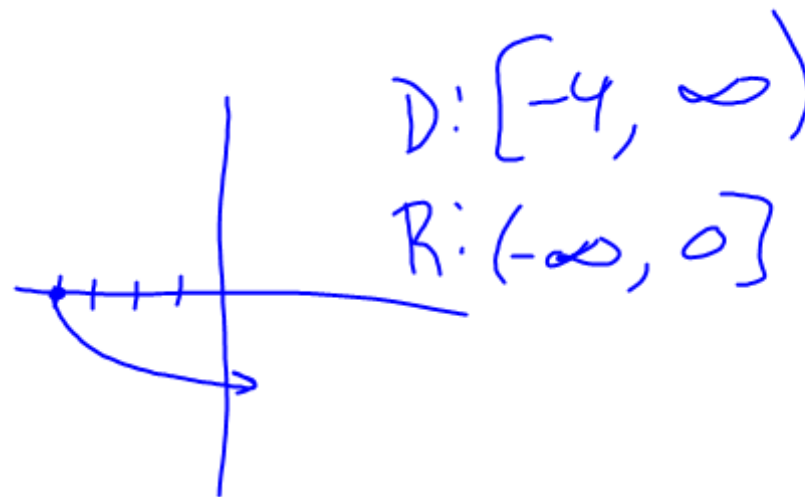
$$f(x) = \sqrt{x}$$

$f(-x) + 4$
 reflect ~~flip~~ over y-axis
 up 4

$$\sqrt{-x} + 4$$



$-f(x+4)$
↑
left 4
flip
reflect
over x -axis



$$y = x^2$$

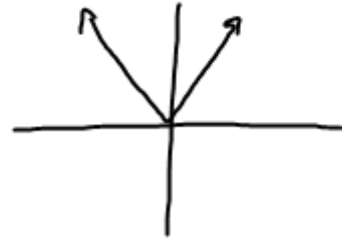
$$y = \sqrt{x}$$

$y = |x| \rightarrow$ Green Book
5.6 p. 228 #1-8

HW \rightarrow Blue Book
p. 97 #1-4, 8-14, 35, 36, 42

$$y = \pm |x - h| + k$$

- absolute value



rt/left

$|x-3|$ right
 $|x+3|$ left

up/down

$|x|+4$ ↑
 $|x|-4$ ↓

$$y = \pm (x - h)^2 + k$$

$$y = \pm \sqrt{\pm x - h} + k$$

$$f(x) = |x - 3| + 4$$

$$f(x) = 20$$

$$20 = |x - 3| + 4$$

$$16 = |x - 3|$$

$$16 = x - 3$$

$$x = 19$$

$$-16 = x - 3$$

$$x = -13$$

Last class (Mon)

in class Green Book, p. 224 # 1-8

HW Blue Book, p. 417 # 1-8, 12, 15, 37-39, 46

This class (Wed)

$y = |x| \rightarrow$ Green Book
5.6 p. 228 # 1-8

HW \rightarrow Blue Book
p. 97 # 1-4, 8-14, 35, 36, 42